

SA 9. (Amended) *B* An apparatus for providing at least one patterned layer on a substrate, which apparatus is provided with a stamp (10, 20) as claimed in claim 1.

REMARKS

This application has been carefully reviewed in light of the Office Action dated December 18, 2002. Claims 1-9 remain pending in this application. Claim 1 is the independent claim. Favorable reconsideration is respectfully requested.

The Office Action objected to claims 6-9 under 37 CFR 1.75(c) as being in improper form. Claims 5-9 have been amended to comply with 37 CFR 1.75 (c) and do not now depend on multiple dependent claims. Applicants hereby request withdrawal of the 37 CFR 1.75 (c) rejection.

The Office Action rejected claim 4 under 35 U.S.C. § 112, second paragraph as being indefinite for failure to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is said that it is not clear how the porous material of the carrier body is distinct from the already claimed carrier body which is permeable to the liquid. Claim 1 states that the carrier body "is permeable" to the liquid. This statement refers to permeability as a general characteristic of the carrier body itself. However, in claim 4, it is further presented

that the carrier body is made up of "a porous" material. The usage of the word "porous" denotes the composition rather than a characteristic of the carrier body. Furthermore, suggested materials of construction for the carrier body are presented in the specification (page 2, lines 28-33). This is evidence that the purpose of claim 4 is to define the composition of the carrier body. Applicants respectfully request withdrawal of the § 112, second paragraph rejection of claim 4.

On the merits, the Office Action rejected claims 1-4 under 35 U.S.C. § 102(b) as being anticipated by Berkland et al. (U.S. Patent No. 3,277,819; hereinafter "Berkland"). The Office Action also rejected claim 5 under 35 U.S.C. § 103(a) as being unpatentable over Berkland in view of U.S. Patent No. 3,678,848 to Roser et. al (Hereinafter "Roser"). Applicants respectfully submit that the claims 1-5 are patentable for at least the following reasons.

Applicants' claim 1 recites: "A stamp (10, 20) for use in a lithographic process, which stamp (10, 20) comprises a stamp body (1) with a first (11) and a second, opposed side (12), with a structured printing face (2) at the first side (11) and a reservoir (3) for a liquid at the second side (12), which stamp body (1) is permeable to the liquid, characterized in that a carrier body (4) is present between the stamp body (1) and the reservoir (3), which

carrier body (4) is permeable to the liquid present in the reservoir (3), and liquid is transported from the reservoir (3) to the printing face (2) during use."

Berkland fails to recite or suggest a carrier body that is identical to the Applicants' claim 1. In column 3, lines 11-13, Berkland mentions a carrier body that is made up of holes. The ink is delivered through the holes in the plate (or weir). Berkland also discloses carrier body that has ribs which form dams and causes the ink to travel in certain directions. Berkland fails to recite a permeable carrier body. The carrier body disclosed by Berkland relies on gravity flow through the holes in the plate, relies on different principles and is composed of a different material. Consequently, Applicants respectfully believe claim 1 to be patentable over Berkland.

Claims 2-4 depend from independent claim 1 discussed above and are believed patentable for at least the same reasons. However, each is also deemed to define an additional aspect of the invention, and should be individually considered on its own merits.

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Berkland in view of Roser. As mentioned above, the stamp disclosed by Applicants differs from that disclosed in Berkland. In addition, Roser only discloses an "inking pad" that is made up of porous glass fibers bonded together. The porosity of the

material is not specified. Therefore, a person of ordinary skill in the art would not be able to modify Berkland and use the disclosure in Roser to produce the Applicants' device. Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) objection.

In view of the foregoing, it is respectfully submitted that allowance of the currently-pending claims is now justified, and favorable consideration is earnestly solicited. Applicants' agent can be contacted at the number below.

Respectfully submitted,

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APPENDIX A

MARKED-UP CLAIMS

2. (Amended) A stamp (10, 20) as claimed in Claim 1, characterized in that the carrier body (4) has a first (41) and a second, opposed side (42), with the stamp body (1) at the first side (41) and the reservoir (3) at the second side (42), in that the carrier body (4) comprises channels (5, 51), and in that at least a ~~proportion~~ portion of the channels (5, 51) extends from the first (41) to the second side (42) of the carrier body (4).

5. (Amended) A stamp (10, 20) as claimed in ~~any one of the preceding claims~~ claim 1, characterized in that the reservoir (3) comprises a porous material.

6. (Amended) A stamp (20) as claimed in ~~any one of the preceding claims~~ claim 1, characterized in that the stamp (20) is cylindrical in shape, with the printing face (2) forming the outermost cylinder shell.

7. (Amended) A method of manufacturing an electronic component, which method comprises the patterning of a surface of a substrate by means of a stamp (10, 20), which stamp (10, 20) is provided with

a structured printing face (2) for use in a lithographic process and which stamp (10, 20) is brought into contact with the substrate such that a liquid present as the printing face (2) is transferred to the surface of the substrate, characterized in that the stamp (10, 20) as claimed in ~~any one of the preceding claims~~ claim 1 is used therein.

9. (Amended) An apparatus for providing at least one patterned layer on a substrate, which apparatus is provided with a stamp (10, 20) as claimed in claim 1 ~~any one of the claims 1 to 6~~.

/ APPENDIX B

MARKED-UP SPECIFICATION

On page 1, Paragraph 4

Such a stamp and such a method are known from *Langmuir*, 15 (1999), 300-304, by Libioulle et al. Patterns can be provided in or on a substrate by means of the known stamp without the necessity of bringing the printing face into contact with a separate, external reservoir of liquid each time, which liquid will also be referred to as ink hereinafter. The term "liquid" is also understood to relate to a solution and to a finely distributed dispersion. The liquid may be very viscous. A compound present ~~in~~^{as} the liquid is then transferred from the printing face to the surface of the substrate. The known stamp has a stamp material of polydimethyl siloxane, which will be denoted PDMS hereinafter. A solution of an alkane thiole in ethanol is present in the reservoir as the ink. The stamp body and the reservoir are clamped in a glass cylinder with a diameter of 5 mm. The printing face is present at one end of the cylinder. The other end is sealed by fusion. In the method, a patterned monolayer of thiole was provided on a gold substrate.

On page 2, Paragraph 4

It was found that, if the stamp is not clamped in ~~in~~ an impermeable cylinder of rigid material, the deformation of patterns in the resulting layer is absent. Swelling of the stamp body was mentioned as the cause of the deformation in the cited publication. In the stamp according to the invention, the stamp body is not clamped in, but fastened on a carrier body. If any swelling should take place owing to the presence of ink, it will take place in direction which is substantially perpendicular to the first and the second side of the stamp body. All lateral dimensions will remain substantially constant during this, so that the pattern of the printing face can be correctly transferred to the substrate. Neither does any bending of the stamp body take place, because the stamp body is supported at its second side.

On page 3, Paragraph 1

In a favorable embodiment, the carrier body has a first and a second, opposed side, with the stamp body at the first side and the reservoir at the second side, the carrier body comprises channels, and at least a ~~proportion~~ portion of the channels extends from the first to the second side of the carrier body. The channels in the carrier body may be provided in various ways. A first example is

through perforation of the carrier body. A second example is through patterning of the carrier body, whereby a pattern of channels is created in the carrier body. Preferably, the channels fully traverse the carrier body in a few locations only. Patterning of the carrier body may take place in various ways: examples are dry or wet etching, powder blasting, and laser cutting. Patterning may also take place from two mutually opposed sides of the carrier body. With such a two-sided treatment, the channels at the one side may have a much greater diameter than those at the other side. It is also possible for the number of channels at the one side to be much larger per unit surface area than at the other side. Further methods of patterning are known to those skilled in the art.

On page 7, Paragraph 1

Fig. 3 is a side elevation of a second embodiment of the stamp 10 with a construction comparable to that of the stamp shown in Fig. 1. A difference, however, is that only a ~~proportion~~ portion of the channels 5, 51, i.e. the channels 5, extend from the first side 41 through to the second side 42 of the carrier body. The carrier body 4 is made of metal which was anisotropically etched from the first side 41 and isotropically from the second side 42. The stamp comprises not only a first reservoir 3, but also a second reservoir 31. The two reservoirs 3, 31 are interconnected by the channels 5,

51 and are included in a circuit which further comprises a storage container, a pump, and connection lines. Pumping round of the liquid through this circuit causes the concentration of the ink in the channels 51, at the second side 12 of the stamp body, to remain substantially constant.

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